



Roy F. Weston, Inc.  
Suite 5700  
700 5th Avenue  
Seattle, WA 98104-5057  
206-521-7600 • Fax 206-521-7601  
[www.rfweston.com](http://www.rfweston.com)

## MEMORANDUM

DATE 28 December 1998  
TO. David Bennett, WAM, U S EPA, Region X  
FROM: Michelle Turner, Chemist, WESTON, Seattle  
~~TM~~ Roger McGinnis, Senior Environmental Chemist, WESTON, Seattle  
SUBJECT. Validation of Polychlorinated Biphenyls (Congeners) Data  
Laboratory Batch K9805693  
Site: Duwamish River

WORK ASSIGNMENT NO 46-23-0JZZ

WORK ORDER NO.: 4000-019-038-5200-00

DOC. CONTROL NO.: 4000-019-038-AAAK

cc: Bruce Woods, RAP-WAM, U.S EPA, Region X  
Dena Hughes, Site Manager, WESTON, Seattle (memo only)  
Kevin Mundell-Jackson, Database Management, WESTON, Seattle

The quality assurance review of fourteen sediment samples, laboratory batch K9805693, collected from the Duwamish River has been completed. Samples were analyzed for polychlorinated biphenyls as individual congeners using EPA Method 8082 by Columbia Analytical Services of Kelso, Washington. The samples were numbered.

98344086	98344087	98344088	98344089	98344090
98344091	98344092	98344093	98344094	98344095
98344096	98344097	98344098	98344099	

### Data Qualifications

The following comments refer to the laboratory performance in meeting the quality control criteria described in the technical specifications of the laboratory subcontract. The review follows the format described in the *National Functional Guidelines for Organic Data Review* (EPA OSWER Directive 9240.1-05, February 1994)

This document was prepared by Roy F. Weston, Inc. expressly for the EPA. It shall not be disclosed in whole or in part without the express, written permission of the EPA.





QA Review Batch K9805693 (PCB Congeners)

Site: Duwamish River

Page 2

1. Timeliness

All samples met holding time criteria of 14 days for sample extraction and 40 additional days for extract analysis as specified in the Sampling and Analysis Plan.

2. Initial Calibration

A six point initial calibration was performed using tetrachloro-meta-xylene (TCMX) as an internal standard. Relative response factors (RRF) were calculated for each target congener. The RRF percent relative standard deviation (%RSD) was less than 20 percent for all analytes, otherwise, regression was used for quantitation.

3 Calibration Verification

Calibration verification standards were analyzed every 12 hours using a midrange standard. The RRF percent difference was less than 25 percent of the initial calibration value with the following exceptions

Date	Compound	% Diff	Associated Samples
9/26/98	PCB77	131	98344099

Results and quantitation limits for samples listed above were qualified as estimated (UJ/J).

4. Retention Time Windows

Relative Retention Time Windows were calculated from initial calibration. Retention times for calibration verification standards were within established windows of  $\pm 0.06$  RRT.

5 Detection Limits

Instrument detection limits met project required quantitation limits with the following exceptions

This document was prepared by Roy F. Weston, Inc. expressly for the EPA. It shall not be disclosed in whole or in part without the express, written permission of the EPA.



QA Review Batch K9805693 (PCB Congeners)

Site: Duwamish River

Page 3

Sample	Compound	QL Goal ( $\mu\text{g}/\text{Kg}$ )	Reported QL ( $\mu\text{g}/\text{Kg}$ )
98344098	PCB123	1	3

Where quantitation limit goals were exceeded, undetected analytes were qualified (UI) to indicate matrix interference.

6. Blanks

a) Laboratory Method Blanks

Laboratory method blank frequency criteria were met.

No target analytes were reported in laboratory method blanks.

b) Field Blanks

No field blanks were associated with this laboratory batch.

7. System Monitoring Compounds (Surrogates)

Surrogate compound percent recoveries met quality control criteria for all samples.

8 Matrix Spike and Matrix Spike Duplicate

Matrix spike (MS) or matrix spike duplicate (MSD) percent recovery for the following compounds were outside QC guidelines:

Sample	Compound	% Recovery	QC Limits
98344098DMS	PCB44	152	60-140
98344098DMS	PCB123	146	60-140

In addition, MS recoveries for 98344098MS and 98344098DMS were not calculated for the following congeners. PCB52, PCB66, PCB101, PCB118, PCB153, PCB105, PCB138, PCB180, and PCB170. Sample results were higher than spike levels, which prevented accurate quantitation of spike recovery values.

This document was prepared by Roy F Weston, Inc expressly for the EPA. It shall not be disclosed in whole or in part without the express, written permission of the EPA.



QA Review Batch K9805693 (PCB Congeners)

Site. Duwamish River

Page 4

Relative percent differences (RPD) between the MS and MSD percent recoveries exceeded QC guidelines for the following compounds.

Sample	Compound	RPD	QC Limits
98344098	PCB28	46	35

No action was taken based solely on MS/MSD data.

9. Laboratory Control Sample (LCS) Analysis

LCS percent recoveries were outside the QC limits for the following compounds.

Sample	Compound	% Recovery	QC Limits
KWG9802876-7	PCB18	34	70-130
KWG9802876-7	PCB28	33	70-130
KWG9802876-7	PCB52	39	70-130
KWG9802876-7	PCB44	39	70-130
KWG9802876-7	PCB66	46	70-130
KWG9802876-7	PCB101	42	70-130
KWG9802876-7	PCB81	34	70-130
KWG9802876-7	PCB77	43	70-130
KWG9802876-7	PCB123	39	70-130
KWG9802876-7	PCB118	43	70-130
KWG9802876-7	PCB114	40	70-130
KWG9802876-7	PCB153	43	70-130
KWG9802876-7	PCB105	39	70-130
KWG9802876-7	PCB138	42	70-130
KWG9802876-7	PCB126	42	70-130
KWG9802876-7	PCB187	43	70-130
KWG9802876-7	PCB128	39	70-130
KWG9802876-7	PCB167	45	70-130

This document was prepared by Roy F. Weston, Inc. expressly for the EPA. It shall not be disclosed in whole or in part without the express, written permission of the EPA.



## QA Review Batch K9805693 (PCB Congeners)

Site: Duwamish River

Page 5

Sample	Compound	% Recovery	QC Limits
KWG9802876-7	PCB156	39	70-130
KWG9802876-7	PCB157	40	70-130
KWG9802876-7	PCB180	42	70-130
KWG9802876-7	PCB169	45	70-130
KWG9802876-7	PCB170	39	70-130
KWG9802876-7	PCB189	40	70-130
KWG9802876-7	PCB195	42	70-130
KWG9802876-7	PCB206	43	70-130
KWG9802876-7	PCB209	45	70-130

Results for compounds listed above were qualified as estimated (J). Undetected compounds were also qualified as estimated (UJ).

## 10 Field Duplicate Analysis

Samples 98344087 and 98344088 were field duplicates. The relative percent difference between duplicate results was within limits of 35 percent RPD for all analytes where concentrations were greater than 5 times the reporting limit.

## 11. Second Column Confirmation

The relative percent difference (RPD) in reported analyte concentration was greater than 35 percent for the primary and confirmation column for the following samples:

Sample Number	Compound	DB-5 Conc (µg/Kg)	DB-1701 Conc (µg/Kg)	RPD
98344086	PCB28	1	2	67
98344086	PCB52	4	6	40
98344086	PCB44	1	2	67
98344086	PCB101	3	6	67
98344086	PCB138	9	5	57
98344087	PCB28	1	2	67

This document was prepared by Roy F Weston, Inc expressly for the EPA. It shall not be disclosed in whole or in part without the express, written permission of the EPA.



## QA Review Batch K9805693 (PCB Congeners)

Site Duwamish River

Page 6

Sample Number	Compound	DB-5 Conc (µg/Kg)	DB-1701 Conc (µg/Kg)	RPD
98344087	PCB101	2	4	67
98344087	PCB138	7	4	55
98344088	PCB28	1	2	67
98344088	PCB101	2	4	67
98344088	PCB105	1	2	67
98344088	PCB138	7	4	55
98344089	PCB66	3	2	40
98344089	PCB101	1	2	67
98344089	PCB138	4	2	67
98344090	PCB101	2	4	67
98344090	PCB138	7	4	55
98344091	PCB52	1	2	67
98344091	PCB66	3	2	40
98344091	PCB101	1	2	67
98344091	PCB138	4	2	67
98344092	PCB52	1	2	67
98344092	PCB66	3	2	40
98344092	PCB101	2	3	40
98344092	PCB138	6	3	67
98344093	PCB28	2	3	40
98344093	PCB52	3	5	50
98344093	PCB101	3	5	50
98344093	PCB138	9	5	57
98344094	PCB52	1	2	67
98344094	PCB66	3	2	40
98344094	PCB101	1	2	67
98344094	PCB138	1	2	67

This document was prepared by Roy F Weston, Inc expressly for the EPA. It shall not be disclosed in whole or in part without the express, written permission of the EPA.



## QA Review Batch K9805693 (PCB Congeners)

Site Duwamish River

Page 7

Sample Number	Compound	DB-5 Conc (µg/Kg)	DB-1701 Conc (µg/Kg)	RPD
98344095	PCB52	1	2	67
98344095	PCB66	3	2	40
98344095	PCB101	1	2	67
98344095	PCB138	5	3	50
98344096	PCB101	1	3	100
98344096	PCB138	5	3	50
98344097	PCB101	2	5	86
98344097	PCB138	8	5	46
98344098	PCB28	2	3	40
98344098	PCB101	12	24	67
98344098	PCB123	22	2	167
98344098	PCB138	32	16	67
98344098	PCB167	1	2	67
98344099	PCB28	1	2	67
98344099	PCB101	4	9	77
98344099	PCB138	15	8	56
98344099	PCB156	1	2	67

Differences can arise from analytical interferences on one column. However, the RPDs are not deemed significant at the reported concentrations. The lower concentration was reported for each analyte, unless interferences or coelution prevented use of the lower concentration.

### 12 Sample Analysis

A cursory review of raw data was performed. All laboratory deliverables were present and complete. A duplicate analysis was performed on sample 98344089. RPDs were less than 35 percent, with the following exceptions.



QA Review Batch K9805693 (PCB Congeners)

Site: Duwamish River

Page 8

Compound	RPD
PCB66	67
PCB101	40
PCB118	40
PCB153	55
PCB138	67
PCB187	40
PCB170	67

Results for these congeners in sample 98344089 are considered to be estimated. The case narrative indicated that several congeners in the LCS do not meet QC limits. The MS and DMS recovery of four congeners for sample 98344098 were outside the QC limits and recoveries for several other congeners were not calculated. Reasons for not calculating recoveries were matrix interference or high levels of analytes present in the sample. Internal QC limits have not been established for congeners. No other complications were noted.

13. Laboratory Contact

The laboratory was not contacted

Data Assessment

Upon consideration of the data qualifications noted above, the data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values.

Data Qualifiers

U - The compound was analyzed for, but was not detected

UJ - The compound was analyzed for, but was not detected. The associated quantitation limit is an estimate because quality control criteria were not met.

J - The analyte was positively identified, but the associated numerical value is an estimated quantity because quality control criteria were not met or because concentrations reported are less than CRDL or lowest calibration standard.

This document was prepared by Roy F. Weston, Inc. expressly for the EPA. It shall not be disclosed in whole or in part without the express, written permission of the EPA.



QA Review Batch K9805693 (PCB Congeners)

Site. Duwamish River

Page 9

- R - Quality control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification
- N - Presumptive evidence of presence of material (tentative identification)
- I - Elevated reporting limit due to matrix interference

This document was prepared by Roy F. Weston, Inc. expressly for the EPA. It shall not be disclosed in whole or in part without the express, written permission of the EPA.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9805693  
**Date Collected:** 8/20/98  
**Date Received:** 8/21/98

Congener Specific PCBs

Sample Name	98344086	Units	ug/Kg (ppb)
Lab Code	K9805693-001	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	WT
PCB 28	EPA 3550B	8082	1	1	9/2/98	9/24/98	1	J
PCB 52	EPA 3550B	8082	1	1	9/2/98	9/24/98	4	
PCB 44	EPA 3550B	8082	1	1	9/2/98	9/24/98	2	
PCB 66	EPA 3550B	8082	1	1	9/2/98	9/24/98	6	
PCB 101	EPA 3550B	8082	1	1	9/2/98	9/24/98	6	↓
PCB 81	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	WT
PCB 77	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 123	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	WT
PCB 118	EPA 3550B	8082	1	1	9/2/98	9/24/98	4	J
PCB 114	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	WT
PCB 153	EPA 3550B	8082	1	1	9/2/98	9/24/98	8	J
PCB 105	EPA 3550B	8082	1	1	9/2/98	9/24/98	1	
PCB 138	EPA 3550B	8082	1	1	9/2/98	9/24/98	9	↓
PCB 126	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	WT
PCB 187	EPA 3550B	8082	1	1	9/2/98	9/24/98	4	J
PGB 128	EPA 3550B	8082	1	1	9/2/98	9/24/98	1	J
PCB 167	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	WT
PCB 156	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	
PCB 157	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 180	EPA 3550B	8082	1	1	9/2/98	9/24/98	6	J
PCB 169	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	WT
PCB 170	EPA 3550B	8082	1	1	9/2/98	9/24/98	3	J
PCB 189	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	WT WT
PCB 195	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	
PCB 206	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	
PCB 209	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓

Approved By IS44/021397p

Zonda M Meuneker

Date 10-1-98

WT 12/12/98

00039

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9805693  
**Date Collected:** 8/20/98  
**Date Received:** 8/21/98

Congener Specific PCBs

Sample Name	98344087	Units	ug/Kg (ppb)
Lab Code	K9805693-002	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	WT
PCB 28	EPA 3550B	8082	1	1	9/2/98	9/24/98	1	J
PCB 52	EPA 3550B	8082	1	1	9/2/98	9/24/98	3	
PCB 44	EPA 3550B	8082	1	1	9/2/98	9/24/98	1	
PCB 66	EPA 3550B	8082	1	1	9/2/98	9/24/98	4	
PCB 101	EPA 3550B	8082	1	1	9/2/98	9/24/98	4	↓
PCB 81	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	WT
PCB 77	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 123	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 118	EPA 3550B	8082	1	1	9/2/98	9/24/98	3	J
PCB 114	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	WT
PCB 153	EPA 3550B	8082	1	1	9/2/98	9/24/98	6	J
PCB 105	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	WT
PCB 138	EPA 3550B	8082	1	1	9/2/98	9/24/98	7	J
PCB 126	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	WT
PCB 187	EPA 3550B	8082	1	1	9/2/98	9/24/98	3	J
PCB 128	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	WT
PCB 167	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	
PCB 156	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	
PCB 157	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 180	EPA 3550B	8082	1	1	9/2/98	9/24/98	4	J
PCB 169	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	WT
PCB 170	EPA 3550B	8082	1	1	9/2/98	9/24/98	2	J
PCB 189	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	WT
PCB 195	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	
PCB 206	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	
PCB 209	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓

Approved By Zonda Meeusker Date 10-1-98  
 1844/021397p

*WT 10/1/98*

00040

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

<b>Client:</b>	Roy F Weston, Inc	<b>Service Request:</b>	K9805693
<b>Project:</b>	Duwamish River/4000-027-001-2019-38	<b>Date Collected:</b>	8/20/98
<b>Sample Matrix:</b>	Sediment	<b>Date Received:</b>	8/21/98

Congener Specific PCBs

Sample Name	98344088	Units	ug/Kg (ppb)
Lab Code	K9805693-003	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 28	EPA 3550B	8082	1	1	9/2/98	9/24/98	1	J
PCB 52	EPA 3550B	8082	1	1	9/2/98	9/24/98	3	
PCB 44	EPA 3550B	8082	1	1	9/2/98	9/24/98	1	
PCB 66	EPA 3550B	8082	1	1	9/2/98	9/24/98	4	
PCB 101	EPA 3550B	8082	1	1	9/2/98	9/24/98	4	↓
PCB 81	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 77	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	
PCB 123	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 118	EPA 3550B	8082	1	1	9/2/98	9/24/98	3	J
PCB 114	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 153	EPA 3550B	8082	1	1	9/2/98	9/24/98	6	J
PCB 105	EPA 3550B	8082	1	1	9/2/98	9/24/98	1	
PCB 138	EPA 3550B	8082	1	1	9/2/98	9/24/98	7	↓
PCB 126	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 187	EPA 3550B	8082	1	1	9/2/98	9/24/98	3	J
PCB 128	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 167	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	
PCB 156	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	
PCB 157	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 180	EPA 3550B	8082	1	1	9/2/98	9/24/98	5	J
PCB 169	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 170	EPA 3550B	8082	1	1	9/2/98	9/24/98	3	J
PCB 189	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 195	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	
PCB 206	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	
PCB 209	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓

Approved By Zonda Meuneker Date 10-1-98  
IS44/021397p

mg/12/98

00041

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9805693  
**Date Collected:** 8/20/98  
**Date Received:** 8/21/98

Congener Specific PCBs

Sample Name	98344089	Units	ug/Kg (ppb)
Lab Code	K9805693-004	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 28	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 52	EPA 3550B	8082	1	1	9/2/98	9/24/98	1	J
PCB 44	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 66	EPA 3550B	8082	1	1	9/2/98	9/24/98	2	J
PCB 101	EPA 3550B	8082	1	1	9/2/98	9/24/98	2	↓
PCB 81	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 77	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 123	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 118	EPA 3550B	8082	1	1	9/2/98	9/24/98	2	UJ
PCB 114	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 153	EPA 3550B	8082	1	1	9/2/98	9/24/98	4	UJ
PCB 105	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 138	EPA 3550B	8082	1	1	9/2/98	9/24/98	4	J
PCB 126	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 187	EPA 3550B	8082	1	1	9/2/98	9/24/98	2	J
PCB 128	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 167	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 156	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 157	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 180	EPA 3550B	8082	1	1	9/2/98	9/24/98	3	J
PCB 169	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 170	EPA 3550B	8082	1	1	9/2/98	9/24/98	1	J
PCB 189	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 195	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 206	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 209	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓

Approved By Wonda Meunker Date 10-1-98

*WGT 10/12/98*

00042

Page No

**COLUMBIA ANALYTICAL SERVICES, INC.**

**Analytical Report**

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9805693  
**Date Collected:** 8/20/98  
**Date Received:** 8/21/98

**Congener Specific PCBs**

<b>Sample Name</b>	98344090	<b>Units</b>	ug/Kg (ppb)
<b>Lab Code</b>	K9805693-005	<b>Basis</b>	Dry
<b>Test Notes</b>			

<b>Analyte</b>	<b>Prep Method</b>	<b>Analysis Method</b>	<b>MRL</b>	<b>Dilution Factor</b>	<b>Date Extracted</b>	<b>Date Analyzed</b>	<b>Result</b>	<b>Result Notes</b>
PCB 18	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 28	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 52	EPA 3550B	8082	1	1	9/2/98	9/24/98	2	J
PCB 44	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 66	EPA 3550B	8082	1	1	9/2/98	9/24/98	4	J
PCB 101	EPA 3550B	8082	1	1	9/2/98	9/24/98	4	J
PCB 81	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 77	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 123	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 118	EPA 3550B	8082	1	1	9/2/98	9/24/98	3	J
PCB 114	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 153	EPA 3550B	8082	1	1	9/2/98	9/24/98	5	J
PCB 105	EPA 3550B	8082	1	1	9/2/98	9/24/98	1	↓
PCB 138	EPA 3550B	8082	1	1	9/2/98	9/24/98	7	↓
PCB 126	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 187	EPA 3550B	8082	1	1	9/2/98	9/24/98	2	J
PCB 128	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 167	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 156	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 157	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 180	EPA 3550B	8082	1	1	9/2/98	9/24/98	4	J
PCB 169	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 170	EPA 3550B	8082	1	1	9/2/98	9/24/98	2	J
PCB 189	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 195	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 206	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 209	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓

Approved By  
IS4021397p

Zonda M. Neuner Date 10-1-98

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9805693  
**Date Collected:** 8/20/98  
**Date Received:** 8/21/98

Congener Specific PCBs

Sample Name	98344091	Units	ug/Kg (ppb)
Lab Code	K9805693-006	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 28	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 52	EPA 3550B	8082	1	1	9/2/98	9/24/98	1	J
PCB 44	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 66	EPA 3550B	8082	1	1	9/2/98	9/24/98	2	J
PCB 101	EPA 3550B	8082	1	1	9/2/98	9/24/98	2	J
PCB 81	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 77	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	
PCB 123	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 118	EPA 3550B	8082	1	1	9/2/98	9/24/98	2	J
PCB 114	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 153	EPA 3550B	8082	1	1	9/2/98	9/24/98	3	J
PCB 105	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 138	EPA 3550B	8082	1	1	9/2/98	9/24/98	4	J
PCB 126	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 187	EPA 3550B	8082	1	1	9/2/98	9/24/98	2	J
PCB 128	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 167	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	
PCB 156	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	
PCB 157	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓
PCB 180	EPA 3550B	8082	1	1	9/2/98	9/24/98	2	J
PCB 169	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 170	EPA 3550B	8082	1	1	9/2/98	9/24/98	1	J
PCB 189	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	UJ
PCB 195	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	
PCB 206	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	
PCB 209	EPA 3550B	8082	1	1	9/2/98	9/24/98	ND	↓

Approved By

*Zonda M Deeneker*

Date 10-1-98

*WGT 12/12/98*

00044

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9805693  
**Date Collected:** 8/20/98  
**Date Received:** 8/21/98

Congener Specific PCBs

Sample Name	98344092	Units	ug/Kg (ppb)
Lab Code	K9805693-007	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 28	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 52	EPA 3550B	8082	1	1	9/2/98	9/25/98	1	J
PCB 44	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 66	EPA 3550B	8082	1	1	9/2/98	9/25/98	2	J
PCB 101	EPA 3550B	8082	1	1	9/2/98	9/25/98	3	J
PCB 81	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 77	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 123	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 118	EPA 3550B	8082	1	1	9/2/98	9/25/98	2	J
PCB 114	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 153	EPA 3550B	8082	1	1	9/2/98	9/25/98	5	J
PCB 105	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 138	EPA 3550B	8082	1	1	9/2/98	9/25/98	6	J
PCB 126	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 187	EPA 3550B	8082	1	1	9/2/98	9/25/98	3	J
PCB 128	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 167	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 156	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 157	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 180	EPA 3550B	8082	1	1	9/2/98	9/25/98	5	J
PCB 169	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 170	EPA 3550B	8082	1	1	9/2/98	9/25/98	2	J
PCB 189	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 195	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 206	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 209	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓

Approved By Zonda M Neuner Date 10-1-98

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9805693  
**Date Collected:** 8/20/98  
**Date Received:** 8/21/98

Congener Specific PCBs

Sample Name	98344093	Units	ug/Kg (ppb)
Lab Code	K9805693-008	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 28	EPA 3550B	8082	1	1	9/2/98	9/25/98	2	J
PCB 52	EPA 3550B	8082	1	1	9/2/98	9/25/98	3	
PCB 44	EPA 3550B	8082	1	1	9/2/98	9/25/98	2	
PCB 66	EPA 3550B	8082	1	1	9/2/98	9/25/98	6	
PCB 101	EPA 3550B	8082	1	1	9/2/98	9/25/98	5	
PCB 81	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 77	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 123	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 118	EPA 3550B	8082	1	1	9/2/98	9/25/98	4	J
PCB 114	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 153	EPA 3550B	8082	1	1	9/2/98	9/25/98	7	J
PCB 105	EPA 3550B	8082	1	1	9/2/98	9/25/98	2	
PCB 138	EPA 3550B	8082	1	1	9/2/98	9/25/98	9	
PCB 126	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 187	EPA 3550B	8082	1	1	9/2/98	9/25/98	3	J
PCB 128	EPA 3550B	8082	1	1	9/2/98	9/25/98	1	J
PCB 167	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 156	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 157	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 180	EPA 3550B	8082	1	1	9/2/98	9/25/98	4	J
PCB 169	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 170	EPA 3550B	8082	1	1	9/2/98	9/25/98	3	J
PCB 189	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 195	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 206	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 209	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	

Approved By

*Wendy M Jeanneret*

Date

*10-1-98*

*00046*

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9805693  
**Date Collected:** 8/20/98  
**Date Received:** 8/21/98

Congener Specific PCBs

Sample Name	98344094	Units	ug/Kg (ppb)
Lab Code	K9805693-009	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 28	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 52	EPA 3550B	8082	1	1	9/2/98	9/25/98	1	J
PCB 44	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 66	EPA 3550B	8082	1	1	9/2/98	9/25/98	2	J
PCB 101	EPA 3550B	8082	1	1	9/2/98	9/25/98	2	J
PCB 81	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 77	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 123	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 118	EPA 3550B	8082	1	1	9/2/98	9/25/98	2	J
PCB 114	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 153	EPA 3550B	8082	1	1	9/2/98	9/25/98	5	J
PCB 105	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 138	EPA 3550B	8082	1	1	9/2/98	9/25/98	6	J
PCB 126	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 187	EPA 3550B	8082	1	1	9/2/98	9/25/98	2	J
PCB 128	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 167	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 156	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 157	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 180	EPA 3550B	8082	1	1	9/2/98	9/25/98	3	J
PCB 169	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 170	EPA 3550B	8082	1	1	9/2/98	9/25/98	2	J
PCB 189	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 195	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 206	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 209	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓

Approved By  
IS4021397p

*Wanda M Deuneker*

Date 10-1-98

*WGT 12/12/98*

00047

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9805693  
**Date Collected:** 8/20/98  
**Date Received:** 8/21/98

Congener Specific PCBs

<b>Sample Name</b>	98344095	<b>Units</b>	ug/Kg (ppb)
<b>Lab Code</b>	K9805693-010	<b>Basis</b>	Dry
<b>Test Notes</b>			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	u/J
PCB 28	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 52	EPA 3550B	8082	1	1	9/2/98	9/25/98	1	J
PCB 44	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	u/J
PCB 66	EPA 3550B	8082	1	1	9/2/98	9/25/98	2	J
PCB 101	EPA 3550B	8082	1	1	9/2/98	9/25/98	2	J
PCB 81	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	u/J
PCB 77	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 123	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 118	EPA 3550B	8082	1	1	9/2/98	9/25/98	2	J
PCB 114	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	u/J
PCB 153	EPA 3550B	8082	1	1	9/2/98	9/25/98	4	J
PCB 105	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	u/J
PCB 138	EPA 3550B	8082	1	1	9/2/98	9/25/98	5	J
PCB 126	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	u/J
PCB 187	EPA 3550B	8082	1	1	9/2/98	9/25/98	2	J
PCB 128	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	u/J
PCB 167	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 156	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 157	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 180	EPA 3550B	8082	1	1	9/2/98	9/25/98	3	J
PCB 169	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	u/J
PCB 170	EPA 3550B	8082	1	1	9/2/98	9/25/98	2	J
PCB 189	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	u/J
PCB 195	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 206	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 209	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	

Approved By  
IS44021397p

*Zonda V. Meuniker*

Date 10-1-98

*MGT 12/12/98*

00048

Page No

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:**  
**Project:**  
**Sample Matrix:**

Roy F Weston, Inc  
Duwamish River/4000-027-001-2019-38  
Sediment

**Service Request:** K9805693  
**Date Collected:** 8/20/98  
**Date Received:** 8/21/98

Congener Specific PCBs

Sample Name	98344096	Units	ug/Kg (ppb)
Lab Code	K9805693-011	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	WT
PCB 28	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 52	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 44	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 66	EPA 3550B	8082	1	1	9/2/98	9/25/98	2	J
PCB 101	EPA 3550B	8082	1	1	9/2/98	9/25/98	3	J
PCB 81	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	WT
PCB 77	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 123	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 118	EPA 3550B	8082	1	1	9/2/98	9/25/98	2	J
PCB 114	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	WT
PCB 153	EPA 3550B	8082	1	1	9/2/98	9/25/98	5	J
PCB 105	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	WT
PCB 138	EPA 3550B	8082	1	1	9/2/98	9/25/98	5	J
PCB 126	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	WT
PCB 187	EPA 3550B	8082	1	1	9/2/98	9/25/98	3	J
PCB 128	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	WT
PCB 167	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 156	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 157	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 180	EPA 3550B	8082	1	1	9/2/98	9/25/98	4	J
PCB 169	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	WT
PCB 170	EPA 3550B	8082	1	1	9/2/98	9/25/98	2	J
PCB 189	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	WT
PCB 195	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 206	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 209	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	

Approved By

Zonda Meuneker

Date 10-1-98

*mg/r12/98*

00049

Page No

**COLUMBIA ANALYTICAL SERVICES, INC.**

**Analytical Report**

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9805693  
**Date Collected:** 8/20/98  
**Date Received:** 8/21/98

**Congener Specific PCBs**

<b>Sample Name</b>	98344097	<b>Units</b>	ug/Kg (ppb)
<b>Lab Code</b>	K9805693-012	<b>Basis</b>	Dry
<b>Test Notes</b>			

<b>Analyte</b>	<b>Prep Method</b>	<b>Analysis Method</b>	<b>MRL</b>	<b>Dilution Factor</b>	<b>Date Extracted</b>	<b>Date Analyzed</b>	<b>Result</b>	<b>Result Notes</b>
PCB 18	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 28	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 52	EPA 3550B	8082	1	1	9/2/98	9/25/98	3	J
PCB 44	EPA 3550B	8082	1	1	9/2/98	9/25/98	1	
PCB 66	EPA 3550B	8082	1	1	9/2/98	9/25/98	5	
PCB 101	EPA 3550B	8082	1	1	9/2/98	9/25/98	5	↓
PCB 81	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 77	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 123	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 118	EPA 3550B	8082	1	1	9/2/98	9/25/98	3	J
PCB 114	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 153	EPA 3550B	8082	1	1	9/2/98	9/25/98	7	J
PCB 105	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 138	EPA 3550B	8082	1	1	9/2/98	9/25/98	8	J
PCB 126	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 187	EPA 3550B	8082	1	1	9/2/98	9/25/98	3	J
PCB 128	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 167	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 156	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 157	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 180	EPA 3550B	8082	1	1	9/2/98	9/25/98	5	J
PCB 169	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 170	EPA 3550B	8082	1	1	9/2/98	9/25/98	3	J
PCB 189	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	uJ
PCB 195	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 206	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	↓
PCB 209	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	

Approved By  
IS44/021397p

*Yonda M Jeuneker* Date 10-1-98

00050

Page No

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9805693  
**Date Collected:** 8/20/98  
**Date Received:** 8/21/98

Congener Specific PCBs

Sample Name	98344098	Units	ug/Kg (ppb)
Lab Code	K9805693-013	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	UJ
PCB 28	EPA 3550B	8082	1	1	9/2/98	9/25/98	2	J
PCB 52	EPA 3550B	8082	1	1	9/2/98	9/25/98	12	
PCB 44	EPA 3550B	8082	1	1	9/2/98	9/25/98	5	
PCB 66	EPA 3550B	8082	1	1	9/2/98	9/25/98	21	
PCB 101	EPA 3550B	8082	1	1	9/2/98	9/25/98	24	
PCB 81	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	UJ
PCB 77	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	
PCB 123	EPA 3550B	8082	3	1	9/2/98	9/25/98	ND	3UJ
PCB 118	EPA 3550B	8082	1	1	9/2/98	9/25/98	19	J
PCB 114	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	UJ
PCB 153	EPA 3550B	8082	1	1	9/2/98	9/25/98	21	J
PCB 105	EPA 3550B	8082	1	1	9/2/98	9/25/98	8	
PCB 138	EPA 3550B	8082	1	1	9/2/98	9/25/98	32	
PCB 126	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	UJ
PCB 187	EPA 3550B	8082	1	1	9/2/98	9/25/98	7	J
PCB 128	EPA 3550B	8082	1	1	9/2/98	9/25/98	5	
PCB 167	EPA 3550B	8082	1	1	9/2/98	9/25/98	1	
PCB 156	EPA 3550B	8082	1	1	9/2/98	9/25/98	4	
PCB 157	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	UJ
PCB 180	EPA 3550B	8082	1	1	9/2/98	9/25/98	11	J
PCB 169	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	UJ
PCB 170	EPA 3550B	8082	1	1	9/2/98	9/25/98	7	J
PCB 189	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	UJ
PCB 195	EPA 3550B	8082	1	1	9/2/98	9/25/98	1	J
PCB 206	EPA 3550B	8082	1	1	9/2/98	9/25/98	1	J
PCB 209	EPA 3550B	8082	1	1	9/2/98	9/25/98	ND	UJ

B The MRL is elevated because of matrix interferences

Approved By

*Zonda M Neunecker*

Date 10-1-98

*mg/r/mg*

00051

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9805693  
**Date Collected:** 8/20/98  
**Date Received:** 8/21/98

Congener Specific PCBs

Sample Name	98344099	Units	ug/Kg (ppb)
Lab Code	K9805693-014	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	9/2/98	9/26/98	ND	uJ
PCB 28	EPA 3550B	8082	1	1	9/2/98	9/26/98	1	J
PCB 52	EPA 3550B	8082	1	1	9/2/98	9/26/98	5	
PCB 44	EPA 3550B	8082	1	1	9/2/98	9/26/98	2	
PCB 66	EPA 3550B	8082	1	1	9/2/98	9/26/98	8	
PCB 101	EPA 3550B	8082	1	1	9/2/98	9/26/98	9	
PCB 81	EPA 3550B	8082	1	1	9/2/98	9/26/98	ND	uJ
PCB 77	EPA 3550B	8082	1	1	9/2/98	9/26/98	ND	uJ
PCB 123	EPA 3550B	8082	1	1	9/2/98	9/26/98	ND	uJ
PCB 118	EPA 3550B	8082	1	1	9/2/98	9/26/98	6	J
PCB 114	EPA 3550B	8082	1	1	9/2/98	9/26/98	ND	uJ
PCB 153	EPA 3550B	8082	1	1	9/2/98	9/26/98	13	J
PCB 105	EPA 3550B	8082	1	1	9/2/98	9/26/98	2	
PCB 138	EPA 3550B	8082	1	1	9/2/98	9/26/98	15	
PCB 126	EPA 3550B	8082	1	1	9/2/98	9/26/98	ND	uJ
PCB 187	EPA 3550B	8082	1	1	9/2/98	9/26/98	8	J
PCB 128	EPA 3550B	8082	1	1	9/2/98	9/26/98	2	J
PCB 167	EPA 3550B	8082	1	1	9/2/98	9/26/98	ND	uJ
PCB 156	EPA 3550B	8082	1	1	9/2/98	9/26/98	1	J
PCB 157	EPA 3550B	8082	1	1	9/2/98	9/26/98	ND	uJ
PCB 180	EPA 3550B	8082	1	1	9/2/98	9/26/98	13	J
PCB 169	EPA 3550B	8082	1	1	9/2/98	9/26/98	ND	uJ
PCB 170	EPA 3550B	8082	1	1	9/2/98	9/26/98	6	J
PCB 189	EPA 3550B	8082	1	1	9/2/98	9/26/98	ND	uJ
PCB 195	EPA 3550B	8082	1	1	9/2/98	9/26/98	2	J
PCB 206	EPA 3550B	8082	1	1	9/2/98	9/26/98	1	J
PCB 209	EPA 3550B	8082	1	1	9/2/98	9/26/98	ND	uJ

Approved By  
IS44021397p

Zonda M. Meunier

Date 10-1-98

*mg/12/12/98*  
**00052**